

**REMARKS**

**Status of the Claims**

All pending claims 1-44 have been rejected. Claims 1-44, as amended, remain in the case. No new matter has been added by this amendment.

**Claim Rejections**

As indicated in the Office Action, Claims 1-44 have been rejected, as follows:

Claims 1, 3-12, 14-44 have been rejected under 35 U.S.C. 102(e) as being anticipated by the International Publication No. WO 03/034664 to Burr. (US 10/035463/United States Patent Application 20030079003 )

Claims 2 and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Burr and further in view of Johansson et al. 2002/0044549.

**Applicants' Response**

Before addressing this ground for rejection, the Applicants would like to draw the Examiner's attention to some of the novel and unobvious features of their claimed invention. The Applicants' claimed invention is a method and system for locating target devices that support a required service in an ad-hoc communications network. . In the Applicants' claimed invention, the middleware provides enhanced application discovery and service discovery for ad-hoc network environments, which is a distinctly different function from those of application programs running on the terminals. For example, middleware software can include an API that helps an application program running on a terminal to find and communicate with a counterpart application running on a server or on another terminal. To quickly locate each application, middleware software can also include an application directory to track the role assumed by each application that is resident in each device in an ad-hoc network environment. The middleware software distributes information that includes a reference to the required service, an association

between each reference and at least one target device, and state information about the at least one target device. In situations where no matching middleware layer exists in another terminal being interrogated, there is no need to continue attempting to establish communication, thereby saving bandwidth, energy, and time.

**Claims Rejected Under 35 U.S.C. 102(e)**

By contrast, the Publication No. WO 03/034664 to Burr discloses that a route to certain devices having matching applications can be established based on routing tables that are shared among the devices during service discovery. Further, Burr discloses in step 930 of Figure 9B, the device compares received application software packages with the application software installed in said device to ensure that matching application software exists within the device, and if there is a match, the device creates an internal routing table based on the information and shares it with other nearby devices. Thus, the Burr reference provides a routing table in ad-hoc network environment containing information of various reachable devices holding certain applications.

However, the Burr reference fails to disclose or suggest the Applicants' claimed service discovery middleware, as discussed above. In addition, the Burr reference fails to disclose or suggest the Applicants' claimed receiving an indication, during inquiry, that the nearby device possesses the middleware software, and the claimed performing a confirmation step upon establishing a connection with the nearby device, as a requirement for initiating execution of the middleware layer program.

There is no disclosure of suggestion of the Applicants' claimed invention in the Publication No. WO 03/034664 to Burr.

The Examiner quotes the following passages from the Burr reference in rejecting claims 8, 19, and 27:

Page 5, lines 26-32: "Among the various operations managed by microprocessor 220 is the management of device list 235. Specifically, as devices enter, leave, or move around the MANET, the possible recipients with which mobile device 205 may vary. (Movement within the MANET may be considered the same as a mobile device leaving the network at one point, and entering the network at another point. Because movement may be managed as a combined entry/exit for the mobile device, the remainder of the description below will only refer to the entry and/or exit of mobile devices from the MANET.)"

Page 6, lines 1-10: "Microprocessor 220 is responsible for updating device list 235 as microprocessor 220 receives information about changes in the MANET. In contrast to the general case using the intuitive approach to MANET management, in an embodiment of the invention mobile device 205 manages information about only a subset of the mobile devices. Specifically, in an embodiment of the invention, mobile device 205 only keeps track of devices it may reach, all of whom share common application software, such as application software 230. For example, if application software 230 is Doom, then microprocessor 220 only tracks which devices within the MANET include Doom, and are connected via other devices including the application software."

Page 8, lines 19-22: "As should be apparent, routing table 405 is dynamic. That is, as devices enter and leave the sub-network, routing table 405 changes. For example, if Kathy joins the sub-network, then routing table 405 adds an entry reflecting the "cheapest" path to route a message to Kathy."

The Burr reference discloses updating of the device list for the purpose of adding the identity of devices that newly join the network, as disclosed in the above cited paragraphs. However, the Burr reference fails to disclose or suggest the Applicants' claimed service discovery middleware, as discussed above. In addition, the Burr reference fails to disclose or suggest the Applicants' claimed receiving an indication, during inquiry, that the nearby device possesses the middleware software, and the claimed performing a confirmation step upon establishing a connection with the nearby device, as a requirement for initiating execution of the middleware layer program.

### **Claims Rejected Under 35 U.S.C. 103(a)**

Claims 2 and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Burr and further in view of Johansson et al. 2002/0044549. Paragraphs [0067] and [0070] of the Johansson reference were cited by the Examiner for an alleged disclosure of a high density of devices over a coverage area for an ad-hoc communications network. These paragraphs read as follows:

[0067] To establish an efficient scatternet, such as an MCS, the nodes should interconnect in a controlled manner to avoid structures that are densely connected. For instance, the number of interconnections between two adjacent piconets should be kept to a minimum, e.g., on the order of 1 to 2, to limit the number of interpiconet (forwarding)

nodes. Further, a network ID, such as a scatternet ID, can be used by a node to determine if another detected node is part of the same scatternet or not. The scatternet ID may be stored in the piconet information database of the piconets of the scatternet. When scatternets merge, a common scatternet ID must be decided upon.

[0070] In order to detect new nodes and adapt to new connectivity conditions due to mobility or obstacles, the INQUIRY process should be invoked by every node periodically. It can be expected that the INQUIRY frequency is highest for idle nodes, lower for slave nodes and lowest for master nodes in an MCS. However, in order to limit the INQUIRY intensity in a dense scatternet, the nodes may decrease their INQUIRY frequency as the number of detected nodes increases. This allows the scatternet to maintain a constant INQUIRY rate independent of the number of nodes.

However, nowhere in the Johansson reference, or in the combination of the Burr reference and the Johansson, is there a disclosure or suggestion of the Applicants' claimed service discovery middleware, as discussed above. In addition, the Burr reference fails to disclose or suggest the Applicants' claimed receiving an indication, during inquiry, that the nearby device possesses the middleware software, and the claimed performing a confirmation step upon establishing a connection with the nearby device, as a requirement for initiating execution of the middleware layer program.

### CONCLUSION

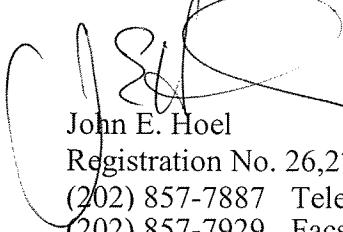
Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 4208-4148. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 4208-4148. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,  
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